

Xenopus laevis Müllerian ducts are sensitive indicators of estrogenic or androgenic chemical exposure *in vivo*

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The Larval Amphibian Growth and Development Assay (LAGDA) is one of a series of Tier 2 test guidelines developed by the US EPA under the Endocrine Disruptor Screening Program. The LAGDA was designed to evaluate effects on growth, thyroid-mediated amphibian metamorphosis and reproductive development following chronic chemical exposure. To evaluate the assay's performance, two chemicals with known modes of action were chosen for testing that targeted the HPG axis; a weak estrogen receptor agonist, 4-*tert*-octylphenol (tOP), and an androgen receptor agonist, 17 β -trenbolone (TB). *Xenopus laevis* embryos were constantly exposed (flow-through conditions) to various doses of either tOP (6.25, 12.5, 25, 50 μ g/L) or TB (12.5, 25, 50, 100 ng/L) and clean water controls until 8 weeks post-metamorphosis, at which time growth measurements were taken and histopathology assessments were made on gonads, reproductive ducts, liver and kidneys. There were no effects on growth in both studies and only minimal pathologies found in the liver, kidneys and gonads of frogs in the high treatments. However, Müllerian duct development was significantly affected following exposure to both chemicals. tOP exposure inhibited oviduct regression in males and caused accelerated maturation in female frogs, whereas TB exposure caused accelerated regression in males and complete regression in >50% of the females in the 100ng/L treatment, making them ostensibly unable to reproduce. Based on these results, it appears that the Müllerian ducts are more sensitive to estrogenic and androgenic influences than are the gonads or other reproductive tissues within the *Xenopus* HPG axis. *This abstract does not necessarily reflect US EPA policy.*

Key words: *Xenopus laevis*, 4-*tert*-octylphenol, 17 β -trenbolone, endocrine disruption

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